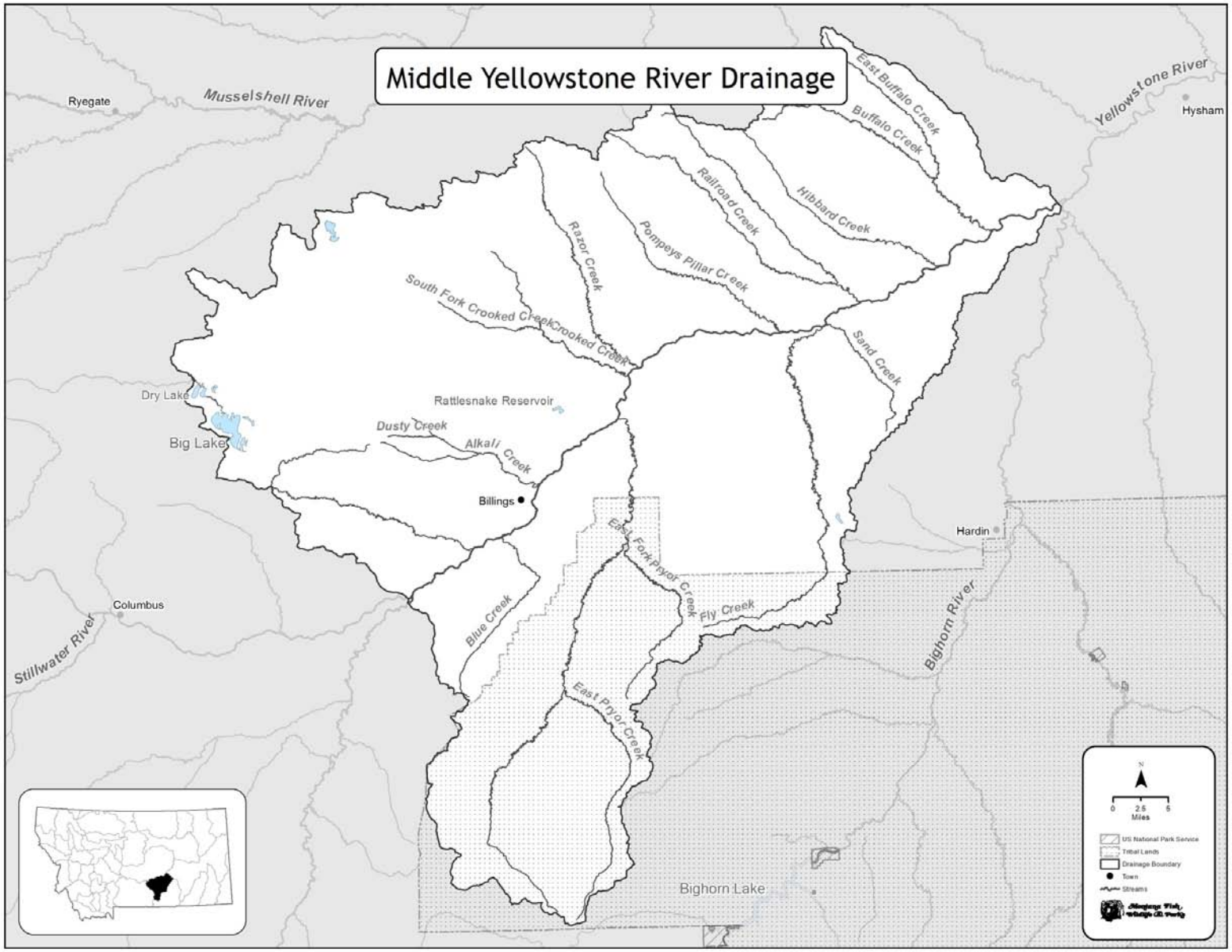
Middle Yellowstone River Drainage
Ryegate
Musselshell River
Yellowstone River
Hysham
East Buffalo Creek
Buffalo Creek
Railroad Creek
Hibbard Creek
Razor Creek
Pompeys Pillar Creek
South Fork Crooked Creek
Crooked Creek
Sand Creek
Dry Lake
Rattlesnake Reservoir
Dusty Creek
Big Lake
Alkali Creek
Billings
Hardin
East Fork Pryor Creek
Fly Creek
Bighorn River
Columbus
Stillwater River
Blue Creek
East Pryor Creek
Bighorn Lake
N
0 2.5 5
Miles
US National Park Service
Tribal Lands
Drainage Boundary
Town
Streams

MIDDLE YELLOWSTONE RIVER DRAINAGE

PHYSICAL DESCRIPTION

This reach of the Yellowstone River begins at the confluence of the Clarks Fork of the Yellowstone River and the Yellowstone River just upstream of Billings, the largest city in Montana. It flows west to east approximately 86 river miles to Ranchers Ditch Diversion Dam which is located about 2.5 miles downstream of the mouth of the Bighorn River. Most of this reach is located in Yellowstone County with the lower 2.5 miles in Treasure County. This entire section of river flows through a wide valley with high sandstone bluffs bordering and confining the river on one side or the other through most of the reach. The dominant bluffs are on the south side of the river upstream of Billings and then switch to the north side the rest of the way down. The channel in this section of the Yellowstone is dominated by a cobble and gravel substrate with many islands and gravel bars. Where it can, the river channel is constantly moving within its flood plain.. The railroad right-of-way borders the south side of the Yellowstone River along most of this reach, and in many places the railroad line forms the south bank of the river so the riverbank is heavily armored with large rip rap. The very upper end of this reach is highly urbanized between the cities of Laurel, Billings and Lockwood. As a result, much of the river bank in this section is armored and controlled with rip rap and dikes. A high percentage of the rip rap in this section is concrete rather than rock. Downstream of Lockwood, the river flows past the small towns of Huntley, Shepherd, Pompeys Pillar and Custer.

The Clarks Fork of the Yellowstone enters the Yellowstone River at the upper end of this reach. Two larger tributaries, Canyon Creek from the north, and Pryor Creek from the south enter the Yellowstone in the Billings area. A number of smaller tributary streams enter the Yellowstone from both sides of the valley throughout this section. The only major drainage that feeds into the Yellowstone in this section is the Bighorn River that flows in from the south about 2.5 miles upstream of the lower end of this reach.

The Yellowstone valley is dominated by agriculture growing sugar beets, grains, hay and cattle. As a result, the valley is laced with a network of large irrigation projects that divert a significant volume of water out of the river. Some of these irrigation projects can entrain large numbers of fish. Many of these irrigation systems are designed to use natural tributary streams as waste channels to return excess water back to the Yellowstone River when irrigation demands are lower. This operation can seriously impact flow patterns in these natural streams, cause serious erosion along these stream channels and transport different fish species unnaturally throughout the valley.

Two major low-head diversion dams are present in this section of the Yellowstone with a third structure at the very lower end of the reach. Huntley Diversion Dam is located about 27.4 river miles downstream from the upper end of this reach or about 10 miles east of Billings. It is a concrete-capped weir with a structural height of 10.5 feet and a hydraulic height of 8 feet. This dam spans the entire main channel of the Yellowstone and during normal flow conditions, is an almost complete fish passage barrier for most species of fish found in this section of the river. A seasonal side channel that bypasses the dam to the north side may provide some fish passage especially during higher flows. This side channel merges with the main channel about 3,650 feet

downstream of the dam so fish moving upstream that are blocked by Huntley Dam are unlikely to drop far enough downstream to find this passage around the dam. A fish passage structure was added to Huntley Dam in 1999-2000 when the dam was rebuilt after damage from high water in 1997. This passage was designed to provide passage for warmwater fish species found in this section of the Yellowstone, but the structure was not built as designed, and follow-up studies found that very few fish actually used the bypass structure. Plans are currently ongoing to redesign and rebuild this fish passage so it can pass warmwater fish.

Waco Diversion Dam is located 62.4 river miles downstream from the upper end of this reach. It is another concrete-capped weir that spans the main river channel. It is not as high as Huntley Dam, but still causes a serious high velocity drop off the face of the dam during normal flow conditions, and is likely a fish barrier to most species in the area. Waco Dam has a more developed bypass channel around the dam to the north. This channel maintains better flows during lower water periods than the bypass around Huntley Dam and the downstream connection of the bypass channel to the main channel is closer to the dams so this channel may provide better fish passage than the Huntley bypass channel.

Ranchers Ditch Diversion is located at the downstream boundary of this reach. This diversion consists of two structures spanning both channels at the top of an island. The diversion in the smaller south channel consists of a concrete-capped rubble weir with a well defined dam crest yielding a nearly vertical plunging flow. This structure presents major fish passage issues. The structure on the larger north channel consists of a concrete and rock cap placed over an old steel piling and brush bundle dam. Flow over this section of the diversion is more irregular with a less distinct drop and greater slope. Because flow over the north dam is more like a flow over a steep riffle this section of the dam is probably less of a fish passage barrier than the other diversions in this reach. The irrigation company is constantly working on the north dam, and recent plans to rebuild part of this diversion could increase fish passage issues.

FISHERIES MANAGEMENT

The upper end of this reach on the Yellowstone River represents the transition zone from a coldwater, trout dominated stream to a warmwater stream. Trout numbers drop off rapidly in the upper 27 miles of this reach as cool and warmwater fish numbers increase. The free flowing nature of the Yellowstone River, the natural hydrograph and fairly natural habitat conditions allows the Yellowstone to support and maintain a wide diversity of native and introduced fish species. This reach of the Yellowstone supports approximately 40 different fish species including 28 native species. As a result, this section of the Yellowstone is managed with an emphasis on maintaining the diverse native fishery of both game and nongame species.

The entire reach is managed to provide a diverse recreational fishery for both native and introduced fish with regulations designed to help protect native populations while promoting harvest on nonnative predatory species that can impact native populations. The entire Yellowstone River is managed as a wild fishery with no routine stocking occurring on any section of the river. The upper end of this reach still supports a fairly good rainbow, brown trout and mountain whitefish fishery. As the river transitions into a warmwater fishery below Huntley Dam emphasis shifts to native channel catfish, sauger, and burbot and nonnative smallmouth bass and walleye. Other game species that occasionally show up in this fishery include northern

pike, largemouth bass and crappie. Some nongame species such as goldeye also provide popular angling opportunities.

Special regulations only allowing the harvest of one sauger per day, with a possession limit of two sauger, is designed to protect the limited and genetically unique sauger population in this reach. Cartersville Dam near Forsyth, about 59 miles downstream of this reach has been shown to be a significant barrier to upstream fish movement with a noticeable reduction in sauger numbers and almost total elimination of some species like shovelnose sturgeon upstream of the dam. Channel catfish limits have been reduced statewide to provide additional protection to this long-lived native game fish. All other game species in this reach are managed under standard Central and Eastern district limits. Angling is open year-round on this section of the Yellowstone River although river ice can severely limit the winter fishery most years. Historically, bank fishermen have been the main anglers on this section of the Yellowstone River; but in recent years more and more anglers are using jet boats, which has significantly increased angler use during the spring, summer and fall seasons.

Another important management concern in this section of the Yellowstone River is protection and enhancement of populations of smaller native fishes including numerous minnow and sucker species. These smaller fish provide the main forage base necessary to maintain the populations of larger game fish in the river. In addition, these nongame species are an important part of the diverse native fish fauna that fulfill an ecological role important to the native species management aspect of the middle Yellowstone River.

The majority of tributary streams that feed this reach of the Yellowstone River are smaller prairie streams that provide limited or no recreational angling opportunities. Many of these streams are important to the different life history stages of the various native fish populations in this reach. The Bighorn River is the only major tributary that flows into this reach of the Yellowstone. It enters the Yellowstone approximately 2.5 miles upstream from the lower end of this reach. The Bighorn River is managed as a recreational tailwater trout fishery in the upper end below Yellowtail Dam and transitions into a warmwater fishery before it enters the Yellowstone River.

Several smaller lakes, ponds, and reservoirs including Lake Elmo, Lake Josephine, Laurel Pond and Anita Reservoir, and private ponds with agreements to allow some public access, provide important urban fisheries in the Billings area. These waters are stocked annually with trout as put-and-take fisheries or with largemouth bass, as needed, as put-grow-and-take fisheries. Being close to the largest population center in the state, these waters receive considerable angler use. Good creel data is lacking and needed for these waters. Water levels in some of these lakes are impacted by irrigation demands so it is important to maintain a good working relationship with the associated irrigation districts.

HABITAT

The upper end of this reach represents a transition zone from a relatively clear, coldwater stream to a more turbid warmwater stream. The Clarks Fork drainage at the top of the reach adds considerable sediment to the Yellowstone from early spring runoff until late fall. As the river flows through the city of Billings, heated water from industrial discharges warms up the water temperatures enough that a section of river downstream of town remains ice free throughout the winter except during the most extreme conditions. All of the tributaries that enter this section of

the Yellowstone add turbidity to the river and this turbidity increases during the irrigation season when the different tributaries are flushed with excess water out of the various irrigation ditches. Water temperatures in the upper reach above Billings can reach the mid-70° F range during low water years, while temperatures in the lower end of the reach above the Bighorn River can get into the mid- to high 80s. Flows at the USGS gage at Billings have ranged from a low of 15,200 cfs on May 10, 1934 to a high of 82,000 cfs on June 12, 1997.

This section of the Yellowstone can be affected by the FWP Drought Fishing Closure Policy that requires priority waters, such as the Yellowstone River, be closed to angling if flow or temperature thresholds are reached. Because this section of river represents the transition from cold to warm water habitat on the Yellowstone, past drought closures have normally only extended downstream to the upper end of the warmwater section at Huntley Dam,.

The channel in this reach of the Yellowstone is dominated by boulder and coble substrate with sediment and sand deposits in slower sections. Where the river isn't controlled by natural bluffs, railroad rip rap, or other man caused bank armoring, it moves fairly naturally within its normal flood plain. River channels are constantly moving and shifting by eroding and laying down new gravel and point bars. Except in the highly urbanized upper section, the riparian zone along this section of the Yellowstone is in fair condition with good cottonwood and willow bottoms. Some agricultural activities extend right to the river's edge, and both Russian olive and salt cedar (noxious weeds) invasions present serious threats to the riparian zone along this entire reach.

Huntley Dam and Waco Dam within the reach, and Ranchers Ditch Diversion at the lower end of the reach, all present fish passage and boat passage issues. These diversions, along with a number of other pump and gravity feed irrigation systems can seriously impact instream flows along this section of the river, and all of them can cause fish loss due to entrainment. FWP has reserved water rights for instream flow with a 1978 priority date on the Yellowstone River. At Billings these reserved rights range from winter flows of 2,483 cfs in January to spring runoff flows of 18,716 cfs in late June. Reserved rights at Billings for the summer and fall irrigation season range between about 3,100 and 4,000 cfs. During low water years, river flows drop below these reservation rights and FWP places calls on water users with rights junior to the FWP 1978 priority date.

FISHING ACCESS

FWP manages 7 FASs along this reach of the Yellowstone River and another site one mile up the Bighorn River that provides boat access to the lower end of this reach. Five of these sites are day use only, while three of them offer overnight camping. A large wildlife management area and associated BLM land located on the north side of the river near the town of Pompeys Pillar provide walk-in access to over five miles of river frontage. Several other publicly owned or managed access points along this section of the Yellowstone provide river access and access for carry-in type boats. Only one of these sites, a county park near Billings, has an actual boat ramp.

Reliable motor boat access is an ongoing concern in this section of the Yellowstone River due to the natural, free flowing nature of the river. Jet boaters are an important and growing user group on this section of river. The constant movement of the river within its flood plain, and the continuing movement and shifting of gravel bars along the river, which help make the river such a unique and important fishery resource, also make it very difficult to maintain permanent motor

boat access along the river. Motor boat use, especially during lower flows, is currently difficult or impossible at several of the existing access sites along this reach, and access changes after each high water event. The highest priorities for new access along this reach would be just up- and downstream of Huntley Dam. In the past it has been possible to boat around Waco Dam through the north bypass channel during most flow conditions. Recent changes in this bypass channel could eliminate boat passage except during high water. Without reliable jet boat passage, additional access above and below Waco Dam would become a high priority. Any potential new access in a relatively stable section of river that can provide reliable ramp access to the river should be considered a high priority.

SPECIAL MANAGEMENT ISSUES

There are several special management issues associated with this section of the Yellowstone River with the most prominent issue being that of native species management. Recent genetic research has shown that the sauger population in this section of the river is genetically unique from any other sauger populations in the remainder of the Yellowstone, Bighorn, or Missouri river drainages in Montana or Wyoming. Additional work is needed to learn more about this sauger population and identify steps necessary to maintain its unique characteristics. Smallmouth bass numbers have greatly increased in this section of the river in recent years. Although they provide a very popular fishery, the impacts this new predator base is having on the native fish populations in the river is poorly understood and needs additional study. Walleye numbers also appear to be increasing in this reach, and their impacts, both as an added predator and their potential hybridization with sauger could impact native fish populations.

The impacts of commercial bait seining on native minnow populations along this section of the Yellowstone River is another major concern. The Yellowstone drainage has become the main source of minnows for a majority of the commercial bait operations throughout eastern Montana. Seiners come from all over eastern Montana to seine the river and tributaries along this reach of the Yellowstone, and this pressure could continue to increase as areas in northeast Montana are closed to seining due to the presence of Eurasian watermilfoil. This seining pressure, especially when combined with increased predation from smallmouth bass and walleye, could have serious impacts on native minnow and sucker populations. Reduction in numbers of these species could seriously impact the native game species that rely on them as forage.

FISHERIES MANAGEMENT DIRECTION FOR MIDDLE YELLOWSTONE RIVER DRAINAGE

Water	Miles/acres	Species	Origin	Management Type	Management Direction
Yellowstone River (Confluence of Clarks Fork of the Yellowstone River to Ranchers Ditch Diversion)	86.1 miles	Rainbow trout, Brown trout, Mountain whitefish	Wild	General	Manage as a recreational fishery allowing for limited harvest with standard regulations
		Sauger	Wild	Conservation/Special Regulations	Manage sauger populations for limited consumptive harvest with harvest restrictions upstream of Cartersville Dam. Conduct studies to evaluate the importance of the unique genetic character of the sauger population in this section of the Yellowstone. Identify spawning areas and migratory patterns that have helped maintain this genetic uniqueness. Determine value and importance of improving or restricting fish passage in the lower Yellowstone to maintaining this genetically unique population.
		Burbot	Wild	General	Attempt to enhance this burbot population and manage for limited harvest. Identify factors limiting the burbot population in this section of the Yellowstone.
		Channel catfish	Wild	General	Manage as a recreational fishery with emphasis on maintaining a diverse population structure, while providing opportunities to catch larger catfish. Standardize catfish sampling as much as possible in Eastern Montana. Evaluate impacts of recent regulation changes on catfish populations.
		Smallmouth bass	Wild	General	Manage as a recreational fishery with emphasis on harvest. Conduct a study to evaluate the impacts of smallmouth bass on native fish populations in the Yellowstone River.
		Walleye	Wild	General	Manage as a recreational fishery with emphasis on harvest.
		Native nongame species	Wild	Conservation	Manage commercial minnow harvest to protect native fish populations. Conduct studies to evaluate and determine habitat and flow needs for native fishes. Work with other permitting agencies to limit impacts of habitat change along the Yellowstone River.

Continued on next page

Water	Miles/acres	Species	Origin	Management Type	Management Direction
Habitat needs and activities: Improve fish passage for warmwater species at all diversion dams from Intake Dam upstream. Reduce entrainment and loss at head gates and pumps. Maintain or improve instream flows in the river and tributaries. Manage habitat projects to maintain the natural stream functions of a wild undammed river, and evaluate habitat projects based on cumulative impacts.					
Pryor Creek (Downstream of Crow Reservation Boundary)	16.1 miles	Multiple species	Wild	General	Evaluate and improve fish passage issues upstream of the Yellowstone River. Monitor fish movement in and out of the Yellowstone River, monitor spawning success of game and nongame species, and monitor the establishment of resident fish populations in Pryor Creek. Manage Pryor Creek to provide a continuing source of young game fish and forage to the Yellowstone River.
Habitat needs and activities: Improve upstream fish passage now that Pryor Creek has been reconnected with the Yellowstone River. Improve summer stream flows and improve habitat to support ecosystem function and production of native species.					
Yellowstone Tributaries (Smaller Prairies Stream)	42 streams and 290 miles	Multiple native species	Wild	Conservation	Manage commercial minnow harvest to protect native fish populations.
Habitat needs and activities: Evaluate barriers in each tributary and improve fish passage and connectivity with the Yellowstone River. Improve habitat to support ecosystem function and production of native species.					
Lake Elmo	65 acres	Rainbow trout, Yellowstone cutthroat	Hatchery	Put-Take	Manage for maximum recreational use with emphasis on harvest. Adjust stocking rates to provide high catch rates on trout while maintaining reasonable growth rates on stocked fish. Stock with surplus brood fish to support kid's fishing events.
		Tiger muskie	Hatchery	Quality	Stock a limited number of fish on a 4 year rotation to maintain predation pressure on the sucker population in the lake while providing anglers the opportunity to catch a trophy sized fish.
		Channel catfish	Hatchery	Put-Grow-Take	Stock annually if fish are available to provide an additional opportunity for anglers fishing this popular urban fishery.
Habitat needs and activities: Work with Billings Heights Water on water management for the lake. Limit water level fluctuation during the weekends and ensure the lake is full before the ditch is shut off in the fall. Develop long-term lake management plan to improve fisheries habitat in the lake.					

Water	Miles/acres	Species	Origin	Management Type	Management Direction
Lake Josephine	20 acres	Largemouth bass	Hatchery/ Wild	General	Stock every other year to supplement natural reproduction. Promote voluntary catch-and-release on 12 to 15 inch bass.
		Tiger muskie	Hatchery	Quality	Stock a limited number of fish on a 4 year rotation to maintain predation pressure on the sucker population in the lake while providing anglers the opportunity to catch a trophy sized fish.
		Channel catfish	Hatchery	General	Stock annually if fish are available to provide an additional opportunity for anglers fishing this popular urban fishery.
Laurel Pond	18 acres	Rainbow trout, Yellowstone cutthroat trout	Hatchery	Put-Take	Manage for maximum recreational use. Adjust stocking rates to provide high catch rates on trout while maintaining reasonable growth rates on stocked fish. Stock with surplus brood fish to support kid's fishing events.
Habitat needs and activities: Maintain windmills for aeration.					
Anita Reservoir	30 acres	Largemouth bass	Hatchery	General	Stock as necessary to maintain a recreational fishery
Habitat needs and activities: Coordinate with the Huntley Irrigation District to improve long-term water management to benefit the fishery.					